

—M. Righi contributes a paper on an electroscope with very sensitive dry piles; its use in some experiments on electricity of contact, and on the electromotive force of heat. The journal concludes with a number of abstracts from other serials.

Bulletin de la Société d'Anthropologie de Paris, 1875.—In fascicule 4^{ème}, tome ix. 1^{re} série, M. G. de Rialle, in considering the present state of our knowledge in regard to the races inhabiting Central Asia, invites travellers to turn their attention to the study of the Herazehs, who occupy the most easterly spurs of the chain of the Paropamisus, and who still preserve many traces of the habits and traditions of the northern steppes, from which they have probably been driven by Mongol invaders. Little is known of these people, who are dreaded by the Afghans for their bravery and ferocity, and who regard themselves as allied to the Calmucs of Cabul. In the course of the discussion on M. de Rialle's paper, Madame C. Royer drew attention to the important service which travellers might render to the sciences of Comparative Ethnology and Anthropology, if they would make young children, in whom distinctions of race are most prominently exhibited, the special objects of their observations. M. Topinard, in conclusion, called upon the members of the Central Asiatic Expedition to discover whether any survivors could still be traced of the fair-skinned people described by the Chinese as inhabiting the western portion of the central plain of Asia two or three centuries before our era, and as having green eyes and red hair. Tchihatcheff asserts that he has met with red-haired individuals among the nomad Turkomans of Asia Minor, and Desmoulin believes that they are typical representatives of the primitive Turks.—In the same number of the *Bulletin* we have a summary of the views entertained by M. A. de Bertrand and others in regard to the definition and classification of prehistoric eras. M. de Bertrand, in considering the age of the Reindeer of Thuringen, suggests that we may refer the period of the introduction of polished stone into Gaul to about 3,400 years before the Christian era, and that we may possibly assume 2,000 years as the maximum of the duration of this age. His attempted determination of these periods was strongly opposed by MM. Leguay, Roujon, and others.—Several interesting reports have been laid before the Paris Society, of the numerous caves and grottoes which have been examined in the course of 1874, by M. Louis Lartet, Lagarde, and other members. The finds at Cumières, near Verdun, have been especially rich, while the explorations made at the cemetery of Curanda (Aisne) are valuable from the great variety of objects intermingled with the human remains, but owing to the successive occupation of the ground by Gallic, Romano-Gallic, and later populations, the results yield no certain evidence of the antiquity of the earlier races, whose remains are interspersed among those of definite and determinable historical character. An examination of the remains *in situ* has, however, led M. Millesamps to the important conclusion that flint instruments were cut and used as recently as the Merovingian age in France.—M. P. Broca has proposed to adopt the word "Stéréométrie" for that branch of craniometric science which treats of the determination of cranial capacities. In his paper M. Broca explains the various methods which he has found best adapted for the purpose. He considers that, of all the substances tried, bullet-lead, although not perfectly free from sources of error, is the most reliable, the results yielded by repeated experiments varying not more than five cubic centimetres for the same skull. No absolutely correct method has as yet been devised, and hence we must content ourselves for the present with approximate results.

Sitzungsberichte der Kgl. böhm. Ges. der Wissenschaften in Prag.—The publication of this Society comprises the whole of 1874, during which period some thirty important papers were read in the Natural Science Department of the Society. We notice the following:—On the independent representation of the *n*th derivative of broken functions of a variable, by Prof. Dr. Studnicka.—On the chemical composition of microsommite, by Prof. Safarik.—On harmonic systems of points on rational curves of the third and fourth order, by K. Zahradnik.—On the discovery of diluvial animal remains in the Elbe Loess, near Aussig, by Dr. Laube.—On some minerals from Kuchelbad, near Prague, by Dr. Safarik.—On the different forms and the signification of the changes in generation of plants, by Dr. L. Celakovsky.—Researches on the hyetography of Bohemia, by Dr. Studnicka.—On the inflorescences of Boraginææ, by Dr. L. Celakovsky.—The solution of the problem of seat and essence of attraction, by Dr. Studnicka.—On the laws regulating

incandescence of wires by electric currents, by Prof. A. von Waltenhofen.—Contradiction of Stieda's criticism on the author's work "On Hair," by Dr. J. Schöbl.—On a hyæna skull, by Dr. A. Fric.—On the Myriopoda hitherto observed in Bohemia, by Prof. F. V. Rosicky.—On a new universal microscope, by Prof. Zenger.—On a new photographic process to enlarge photographs correctly and to any size, by the same.—On curves of the fourth order, by Prof. E. Weyr.—On the travels of M. Emil Holub in Southern Africa, by Prof. C. Koristka.—On a new mineral mixture, named Parankerite, by Dr. Boricky.—On the theory of Cardioids, by Dr. K. Zahradnik.—On the discovery of an Ichthyomorphous *Ceratodus Barrandei* in the gas coal of the Rakonitz deposit, by Dr. A. Fric.—On the elements of a mechanical theory of ocean currents, by Prof. G. Blazek.—On the Cladocera-fauna of Bohemia, by B. Hellich. Preliminary researches on the Annelida of Bohemia hitherto observed, by F. Vejdovsky.—On the integration of differential equations of the first order, by Dr. E. Weyr.—On the pseudoscorpiones-fauna of Bohemia, by Prof. A. Stecker.—On the coal deposit of Pilsen, by Prof. J. Krejci.—Report on the chalk deposits of Perutz, in Bohemia, and their fossil remains, by the same.—On a new simple method of determining tautozonal planes of crystals, by the same.

THE August number of the *Bulletin de la Société d'Acclimatation de Paris* contains a very instructive paper, by Dr. Vidal, on the fauna and flora of Japan. The useful indigenous animals of that country are not so numerous as the geographical position of the islands would seem to indicate; the principal are a small species of ox, goats, rabbits, and wild boars. Imported animals, such as sheep and pigs, are rare, the former, indeed, not appearing to thrive in the climate, although they exist in considerable quantities on the opposite coasts of Northern China. A species of small black bear, and monkeys, are prized by the natives as articles of diet. Horses are abundant, though the ass and the mule are unknown in the country. Birds, both useful and ornamental, are very numerous, the principal being several varieties of duck and common "barndoor fowls," pheasants, and quails; wild geese are abundant, but the domestic variety and the turkey are almost unknown. Of fish there is a plentiful supply, and the fisheries form one of the most important industries of the country. Salmon are very common and highly prized.—M. L. Faton gives a summary of experiments with several kinds of vegetables and useful and ornamental plants, which is valuable as indicating the species which best repay the trouble of scientific cultivation.—At the July meeting of the Society a letter was read from M. C. Naudin, enclosing seeds of *Cytisus proliferus* from the Canary Islands, a plant which is cultivated there for the sake of its leaves, which are used as food for cattle. M. Naudin suggests that it might be usefully cultivated in France, or at any rate at the Cape of Good Hope, and in Australia.—Another plant (*Reana luxurians*), called in Guatemala Téosinté, and cultivated there for the same purposes as the one above named, is recommended by M. J. Rossignon.

Reale Istituto Lombardo di Scienze e Lettere. Rendiconti, vol. viii. fasc. xvi. The first portion of this number contains the following among other papers:—On the hydrological map of the department of Senna e Marna, by M. Curioni.—On two benzol-bisulphuric acids and their relations to other compounds, by MM. Koerner and Monselise.—The second portion of these *Rendiconti* contains reports by M. Carcano and M. Hajech, on the work of the Institute during the year; accounts of prize awards, with reports of committees on the competitive memoirs; and an announcement of prizes to be competed for within the next three years. Among the subjects of the latter we note the following:—Actual mean longevity of man in Italy, compared with other peoples; What are the best antifermentatives and antiseptics, disinfectants and deodorizers? Indicate a good method of cremation; Respective merits of animal and human vaccination; Embryogeny of silkworm; History of the progress of the anatomy and physiology of the brain, in the present century.

SOCIETIES AND ACADEMIES

MANCHESTER

Scientific Students' Association, Oct. 20. — Mr. John Plant, F.G.S., in the chair.—Mr. Wm. Gee lectured on *Polytrichum commune* (the common Hair-moss), as a type of moss-structure, commenting on the points of differentiation between true mosses and cryptogams erroneously associated with them, tracing the life-cycle, the minute anatomy of the organs, and the

function of mosses in nature and art.—The Chairman exhibited a collection of Ammonites from the Kimmeridge Clay and from the Tertiary Sand near Alexandria.—Mr. C. Robinson showed local drift-shells; and Mr. Gee a miner's lamp-glass, tempered by the new process to withstand change of temperature, although of the usual thickness ($\frac{1}{4}$ inch).

CALIFORNIA

Academy of Sciences, Aug. 2.—Mr. H. Edwards, vice-president, in the chair.—Mr. Lackington presented a paper on some new Crustaceans of the Pacific coast.—Dr. Blake made some remarks on a mineral which he had presented to the Academy a few months ago under the name of Colomite. He stated that a superficial analysis of the mineral had then led him to believe that it was a potash mica, containing a very large quantity of chromium. Since that time the mineral had been analysed by Prof. Genth, of Philadelphia, who had discovered that it contained a large quantity of vanadium, more than 20 per cent. Under these circumstances he proposed to name the mineral Roscoelite, as Prof. Roscoe, of Manchester, had so successfully investigated the properties of vanadium. The mineral occurs in a gold mine in the lower hills of the western slope of the Sierra. It is associated with a small vein of quartz, but it is principally in the mica that the gold is found, a few pounds of the mineral (a miner's panful) often yielding as much as \$240 in gold. The occurrence of so large a quantity of a pentavalent metalloid in a mica offers another and perhaps the most striking anomaly presented by this class of minerals as regards their chemical composition. Dr. Blake then alluded to some physiological experiments he had performed to determine the molecular relations of beryllium. Neither the specific heat of the metal nor the vapour density of its chloride had been determined, and chemists were undecided as to whether it was a bivalent or quadrivalent element. Its physiological reactions, when introduced directly into the blood of living animals, so closely resembled those of alumina that there can be no doubt but that it belongs to the same isomorphous group, and that it is a quadrivalent element. There is also a close relation between the intensity of physiological action of this substance and its atomic weight. When compared with aluminum, as in a series of experiments conducted expressly to determine this point, the quantities of Be_2O_3 , under the form of sulphate, required to kill 2,270 grammes of rabbit, when injected into the veins in divided doses (three injections), were '059, '061, '050; the quantities of Al_2O_3 , introduced into the veins under the same conditions were '021, '023, '022; and the smallest quantity required to kill, when introduced in one injection, was, of Al_2O_3 , '016, and of Be_2O_3 , '038, showing a marked increase in the physiological action of these substances, with an increase in the atomic weights, the atomic weight of Al being 27.4 and of Be, 14. This, the author believes, is the first occasion on which physiological reactions have been used to determine the chemical properties of a substance. Should, however, the carbon compounds follow the same laws in their physiological reactions as the inorganic elements, living matter must offer a valuable reagent in investigating their molecular properties. The interesting experiments of Messrs. McKendrick and Dewar, published in the 23rd vol. of the Proceedings of the Royal Society, would indicate that such may be the case, as these gentlemen found in experimenting with the compounds of the Chinolin and Pyridin groups, that the physiological actions became stronger in going from the lower to the higher members of the series. They also observed that in the Pyridin group, when the base became doubled by condensation, not only was the physiological action more intense, but its character was completely altered, agreeing in these respects with the salts of iron with which analogous changes take place, both in the character and intensity of their physiological action, when the molecule is doubled in the change from ferrous to ferric salts, as the author has shown in the *Journal of Anatomy and Physiology*, vol. iii. p. 24.

PARIS

Academy of Sciences, Oct. 18.—M. Frémy in the chair.—Admiral Paris presented the volume of the "Connaissance des Temps" for 1877. This publication, prepared by M. Loery, is now double in size what it was twenty years ago, and much improved. The following papers were read:—New problems relative to the conditions of equality of size of rectilinear segments on the tangents of geometrical curves of any order and class, by M. Chasles.—Third note on the electric conductivity of bodies moderately conducting, by M. Du Moncel. In the polarisation currents obtained with silic of Herouville,

he found that the electrodes do not simply play the part of conductor, but acquire a peculiar electric state, which they may retain for days, and even under intense heat; this state cannot alone produce a current of polarisation; the dielectric must have undergone electrification under influence of the electrodes. But once this has occurred, they may be separated for some time without losing the power of giving a current when brought together again. The phenomena are analogous to those of phosphorescence.—On the trepanation and evacuation of long bones in cases of osteitis of neuralgic form, by M. Gosselin.—Fall of a meteorite on 12th May, 1874, at Sersukow, in Russia, by M. Daubrée. It weighs ninety-eight kilogrammes, and is of the oligosidère type.—On the carpellary theory according to the Irideæ (second part), by M. Trecul.—On the rotatory power of quartz in the ultra violet spectrum, by M. Croullebois.—On the laws which govern reactions with direct addition, by M. V. Markovnikoff.—On a case of oxidation in the cold state, of acetic acid in neutral or weakly alkaline liquids, in presence of nitrates and phosphates of soda and potash, by M. Mehay.—Process for artificial cooling of considerable masses of air by contact with a cold liquid, by MM. Mignon and Rouart. In a candle manufactory at Amsterdam, they use a cooled solution of chloride of calcium, which descends on the uppermost of a series of plates rotated with the axis of a cylinder between discs projected from the cylinder-wall, thus giving a continuous finely-divided cascade. Through this passes 26,000 kilogrammes of air in an hour, and a building of 3,051 cubic metres' capacity has thus been kept, in September, at 12° or 13° C.—On the sexual generation of the Vorticellians, by M. Balbiani.—M. Petit and M. Godet presented notes on treatment of Phylloxera.—M. Hugo, one on a transformation of the law of Bode, regarding the distances of the planets.—M. Brachet, on an improvement of Gramme's machine, a modification in the microscope, and a process for rendering ordinary glass fluorescent.—M. Varsin-Chardanne submitted several memoirs on aerial navigation.—M. Marchand described his process of aerial navigation.—The Secretary quoted from a work of M. Mouchot's in 1869, where he refers to the ancient Roman method of utilising solar heat.—The Secretary also noticed a second edition of "Preliminary notions for a treatise on the construction of ports in the Mediterranean," by M. Cialdi.—Magnetic map of France for 1875, by M. Marié Davy. This note gives tables of declination and annual variation for different districts.—Observations of the Perseides, made on Aug. 10, 1875, at Spoix (Côte d'Or), by M. Gruy.—On a chloride of silver pile composed of 3,240 elements, by MM. Warren de la Rue and H. W. Müller.—On a successful case of trepanation for an osteitis of neuralgic form, in a flat bone—the frontal—by M. Pingaud.—On the frequency of earthquakes relatively to the age of the moon, by M. Perrez. He finds evidence that during the last century and a quarter, earthquakes have been more frequent at syzygies than at quadratures.—M. Rivet transmitted a note from Martinique on earthquake shocks there and the electric phenomena which preceded them in telegraph wires.—M. Montucci presented a note on the hypothesis of a terrestrial central fire, and M. Noirit one on an automatic dredger.

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